

CLAIMS

1. A process for the production of gasoline with a low sulphur content from catalytic cracking raw gasoline containing olefins, mercaptans and sulphur-containing compounds other than mercaptans, in which process:
- 5 (1) the raw gasoline is fractionated into at least one light cut with a boiling point of 210°C or less containing the major portion of the olefins and mercaptans, and at least one heavy fraction;
- 10 (2) the light cut undergoes mild hydrotreatment in the presence of hydrogen with a catalyst containing at least one group VIII metal and/or at least one group VI metal, at a temperature of 160-380°C, at a pressure of 5-50 bar, and the effluent obtained is stripped to eliminate H₂S;
- 15 (3) the light fraction undergoes sweetening which is carried out using at least one of the following methods:
- 20 • before the mild hydrotreatment step, treating the light cut in the presence of hydrogen using a catalyst containing 0.1-1% of palladium deposited on a support, at a temperature of 50-250°C, at a pressure of 5-50 bar;
- 25 • extractive sweetening of the effluent obtained after mild hydrotreatment and stripping;
- 30 • sweetening the effluent obtained after mild hydrotreatment and stripping with an oxidizing agent, a catalyst and an alkaline base which may or may not be incorporated into the catalyst.
2. A process according to claim 1, in which the heavy fraction undergoes hydrotreatment in the presence of hydrogen with a catalyst containing at least one group VI metal and/or at least one group VIII metal, at a temperature of 200-420°C, at a pressure of 20-80 bar, and the effluent obtained is stripped to eliminate H₂S.
3. A process according to claim 1 or claim 2, in which the light cut has an end point of 180°C or less.

4. A process according to any one of the preceding claims, in which the light cut has an end point of 160°C or less.
5. A process according to any one of the preceding claims, in which the light cut has an end point of 145°C or less.
- 5 6. A process according to any one of the preceding claims, in which, before the mild hydrotreatment step, the light cut undergoes selective diene hydrogenation and the hydrotreated cut is stripped and undergoes sweetening.
7. A process according to any one of the preceding claims, in which the light cut treatment before the mild hydrotreatment step is carried out using a catalyst containing 0.1-1% of palladium and 1-20% of nickel.
- 10 8. a process according to any one of claims 1 to 6, in which the light cut treatment before the mild hydrotreatment step is carried out using a catalyst containing 0.1-1% of palladium and gold, in an Au/Pd weight ratio of at least 0.1 and less than 1.
- 15 9. A process according to any one of the preceding claims, in which the extractive sweetening step or the sweetening step using an oxidizing agent is carried out at 20-100°C at a pressure of 1-30 bar.
10. An apparatus for the production of gasolines with a low sulphur content from a catalytic cracking gasoline, comprising:
- 20 • a fractionation column (1) provided with a line (2) for introducing raw gasoline from a catalytic cracking step and comprising at least two lines, one (3) in the upper portion of the column for taking off a light cut, and the other (4) in the lower portion of the column for taking off the heavy cut;
- 25 • a zone (5) for hydrotreatment in the presence of hydrogen, comprising a catalytic bed, an inlet line (6) for the light gasoline cut to be treated, said line being connected either to the fractionation column (1), or to the zone (7) for treatment over a palladium catalyst, said hydrotreatment zone also comprising an outlet line (8) for hydrotreated effluent;

- a stripping zone (9) comprising a line for introducing light hydrotreated gasoline, a line (10) for evacuating H₂S and an outlet line (11) for stripped light gasoline;

and said apparatus also comprising at least one of the following sweetening zones:

- 5 • a sweetening zone (12) located after the stripping zone, comprising a line for introducing the stripped light gasoline and a line (14) for supplying an oxidizing agent to said zone;
- 10 • a treatment zone (7) located after the hydrotreatment zone and comprising a line (3) for introducing the light gasoline cut from the fractionation column, an outlet line for the treated light gasoline cut, said zone also comprising at least one catalyst bed containing 0.1-1% of palladium deposited on a support, and said apparatus further comprising a line (13) for taking the stripped and sweetened light gasoline out of the apparatus, and connected either to the zone (12) or to the zone (9).

15 11. An apparatus according to claim 10, in which the sweetening zone (12) is located after the stripping step and the apparatus further comprises a selective diene hydrogenation zone located between the fractionation column and the mild hydrotreatment zone, said hydrogenation zone comprising a line for introducing the light cut and an outlet line for the dedienized light cut.

20 12. A An apparatus according to claim 10 or claim 11, also comprising a zone (15) for hydrotreating the heavy fraction, provided with a line (4) for introducing the heavy cut from the column, an outlet line (16) for the hydrotreated cut and a line (17) supplying hydrogen to the feed or to the zone, said zone being followed by a stripping column (18) provided with a line for introducing the hydrotreated cut, an H₂S outlet line (19) and an outlet line (20) for the hydrotreated cut.

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